

400W Transient Voltage Suppressor



P4KE Series

Stand-off Voltage: 6.8 ~ 440V

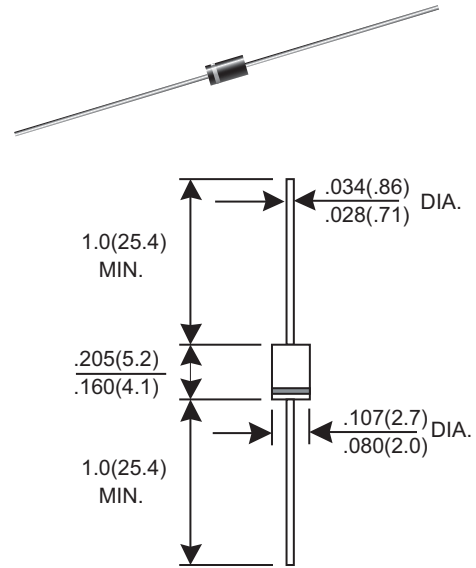
Power Dissipation: 440 Watts

Features:

- Glass passivated chip
- Low leakage
- Uni and Bidirection unit
- Excellent clamping capability
- The plastic material has UL recognition 94V-0
- Fast response time

Mechanical Data:

- Case: Molded plastic DO-41
- Polarity: by cathode band denotes uni-directional device none cathode band denoted bi-directional device
- Weight: 0.34 gram



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

| | SYMBOL | VALUE | UNIT |
|---|----------------|-------------|------------------|
| Peak Power Dissipation at $T_L=25^\circ\text{C}$ $T_P=1\text{ms}$ (Note 1,2) | P_{PK} | Minimum 400 | Watts |
| Peak Forward Surge Current, 8.3ms single Half sine-wave super imposed on rated load (Note 3) (JEDEC method) | I_{FSM} | 40 | A |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$ | $P_{M(AV)}$ | 1.0 | Watts |
| Maximum Instantaneous forward voltage at 35A for unidirectional devices only (Note 3) | V_F | 3.5 | V |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

NOTES : (1) Non-repetitive current pulse, per fig. 3 and derated above $T_A=25^\circ\text{C}$ per fig. 1.
(2) Thermal Resistance junction to ambient.
(3) 8.3ms single half-sine wave duty cycle= 4pulses maximum per minute(unidirectional units only).

-G suffix designates RoHS compliant Version

| Part No. | Absolute Maximum Rating (Ta=25°C) | | | | | Electrical Characteristics (Ta=25°C) | | | |
|-------------|-----------------------------------|-----------------------------|-----------------------------|------------------------|-------------------------------|--------------------------------------|----------------------|---|------|
| | V _{WM} (V) | V _{BR} Min. (V) | V _{BR} Max. (V) | I _T (mA) | I _{FSM} (A)@8.3mS | Max. Vc @I _{PPM} | | Max. I _D (uA) @V _{WM} | |
| | | | | | | (V) | I _{PPM} (A) | UNI | BI |
| P4KE6.8(c) | 5.50 | 6.12 | 7.48 | 10 | 40 | 10.8 | 38.0 | 1000 | 2000 |
| P4KE6.8(c)A | 5.80 | 6.45 | 7.14 | 10 | 40 | 10.5 | 40.0 | 1000 | 2000 |
| P4KE7.5(c) | 6.05 | 6.75 | 8.25 | 10 | 40 | 11.7 | 36.0 | 500 | 1000 |
| P4KE7.5(c)A | 6.40 | 7.13 | 7.88 | 10 | 40 | 11.3 | 37.0 | 500 | 1000 |
| P4KE8.2(c) | 6.63 | 7.38 | 9.02 | 10 | 40 | 12.5 | 33.0 | 200 | 400 |
| P4KE8.2(c)A | 7.02 | 7.79 | 8.61 | 10 | 40 | 12.1 | 35.0 | 200 | 400 |
| P4KE9.1(c) | 7.37 | 8.19 | 10.00 | 1 | 40 | 13.8 | 30.0 | 50 | 100 |
| P4KE9.1(c)A | 7.78 | 8.65 | 9.55 | 1 | 40 | 13.4 | 31.0 | 50 | 100 |
| P4KE10(c) | 8.10 | 9.00 | 11.0 | 1 | 40 | 15.0 | 28.0 | 10 | 20 |
| P4KE10(c)A | 8.55 | 9.50 | 10.5 | 1 | 40 | 14.5 | 29.0 | 10 | 20 |
| P4KE11(c) | 8.92 | 9.90 | 12.1 | 1 | 40 | 16.2 | 26.0 | 5 | 10 |
| P4KE11(c)A | 9.40 | 10.5 | 11.6 | 1 | 40 | 15.6 | 27.0 | 5 | 10 |
| P4KE12(c) | 9.72 | 10.8 | 13.2 | 1 | 40 | 17.3 | 24.0 | 5 | 5 |
| P4KE12(c)A | 10.2 | 11.4 | 12.6 | 1 | 40 | 16.7 | 25.0 | 5 | 5 |
| P4KE13(c) | 10.5 | 11.7 | 14.3 | 1 | 40 | 19.0 | 22.0 | 5 | 5 |
| P4KE13(c)A | 11.1 | 12.4 | 13.7 | 1 | 40 | 18.2 | 23.0 | 5 | 5 |
| P4KE15(c) | 12.1 | 13.5 | 16.5 | 1 | 40 | 22.0 | 19.0 | 5 | 5 |
| P4KE15(c)A | 12.8 | 14.3 | 15.8 | 1 | 40 | 21.2 | 20.0 | 5 | 5 |
| P4KE16(c) | 12.9 | 14.4 | 17.6 | 1 | 40 | 23.5 | 18.0 | 5 | 5 |
| P4KE16(c)A | 13.6 | 15.2 | 16.8 | 1 | 40 | 22.5 | 19.0 | 5 | 5 |
| P4KE18(c) | 14.5 | 16.2 | 19.8 | 1 | 40 | 26.5 | 16.0 | 5 | 5 |
| P4KE18(c)A | 15.3 | 17.1 | 18.9 | 1 | 40 | 25.5 | 17.0 | 5 | 5 |
| P4KE20(c) | 16.2 | 18.0 | 22.0 | 1 | 40 | 29.1 | 14.0 | 5 | 5 |
| P4KE20(c)A | 17.1 | 19.0 | 21.0 | 1 | 40 | 27.7 | 15.0 | 5 | 5 |
| P4KE22(c) | 17.8 | 19.8 | 24.2 | 1 | 40 | 31.9 | 13.0 | 5 | 5 |
| P4KE22(c)A | 18.8 | 20.9 | 23.1 | 1 | 40 | 30.6 | 14.0 | 5 | 5 |
| P4KE24(c) | 19.4 | 21.6 | 26.4 | 1 | 40 | 34.7 | 12.0 | 5 | 5 |
| P4KE24(c)A | 20.5 | 22.8 | 25.2 | 1 | 40 | 33.2 | 13.0 | 5 | 5 |
| P4KE27(c) | 21.8 | 24.3 | 29.7 | 1 | 40 | 39.1 | 11.0 | 5 | 5 |
| P4KE27(c)A | 23.1 | 25.7 | 28.4 | 1 | 40 | 37.5 | 11.2 | 5 | 5 |
| P4KE30(c) | 24.3 | 27.0 | 33.0 | 1 | 40 | 43.5 | 10.0 | 5 | 5 |
| P4KE30(c)A | 25.6 | 28.5 | 31.5 | 1 | 40 | 41.4 | 10.0 | 5 | 5 |
| P4KE33(c) | 26.8 | 29.7 | 36.3 | 1 | 40 | 17.7 | 9.0 | 5 | 5 |
| P4KE33(c)A | 28.2 | 31.4 | 34.7 | 1 | 40 | 45.7 | 9.0 | 5 | 5 |
| P4KE36(c) | 29.1 | 32.4 | 39.6 | 1 | 40 | 52.0 | 8.0 | 5 | 5 |
| P4KE36(c)A | 30.8 | 34.2 | 37.8 | 1 | 40 | 49.9 | 8.4 | 5 | 5 |
| P4KE39(c) | 31.6 | 35.1 | 42.9 | 1 | 40 | 56.4 | 7.4 | 5 | 5 |
| P4KE39(c)A | 33.3 | 37.1 | 41.0 | 1 | 40 | 53.9 | 7.8 | 5 | 5 |
| P4KE43(c) | 34.8 | 38.7 | 47.3 | 1 | 40 | 61.9 | 6.8 | 5 | 5 |
| P4KE43(c)A | 36.8 | 40.9 | 45.2 | 1 | 40 | 59.3 | 7.1 | 5 | 5 |
| P4KE47(c) | 38.1 | 42.3 | 51.7 | 1 | 40 | 67.8 | 6.2 | 5 | 5 |
| P4KE47(c)A | 40.2 | 44.7 | 49.4 | 1 | 40 | 64.8 | 6.5 | 5 | 5 |
| P4KE51(c) | 41.3 | 45.9 | 56.1 | 1 | 40 | 73.5 | 5.7 | 5 | 5 |
| P4KE51(c)A | 43.6 | 48.5 | 53.6 | 1 | 40 | 70.1 | 6.0 | 5 | 5 |
| P4KE56(c) | 45.4 | 50.4 | 61.6 | 1 | 40 | 80.5 | 5.2 | 5 | 5 |

| Part No. | Absolute Maximum Rating (Ta=25°C) | | | | | Electrical Characteristics (Ta=25°C) | | | |
|-------------|-----------------------------------|-----------------------------|-----------------------------|------------------------|-------------------------------|--------------------------------------|----------------------|---|----|
| | V _{WM} (V) | V _{BR} Min. (V) | V _{BR} Max. (V) | I _T (mA) | I _{FSM} (A)@8.3mS | Max. Vc @I _{PPM} | | Max. I _D (uA) @V _{WM} | |
| | | | | | | (V) | I _{PPM} (A) | UNI | BI |
| P4KE56(c)A | 47.8 | 53.2 | 58.8 | 1 | 40 | 77.0 | 5.5 | 5 | 5 |
| P4KE62(c) | 50.2 | 55.8 | 68.2 | 1 | 40 | 89.0 | 4.7 | 5 | 5 |
| P4KE62(c)A | 53.0 | 58.9 | 65.1 | 1 | 40 | 85.0 | 5.0 | 5 | 5 |
| P4KE68(c) | 55.1 | 61.2 | 74.8 | 1 | 40 | 98.0 | 4.3 | 5 | 5 |
| P4KE68(c)A | 58.1 | 61.6 | 71.4 | 1 | 40 | 92.0 | 4.6 | 5 | 5 |
| P4KE75(c) | 60.7 | 67.5 | 82.5 | 1 | 40 | 108.0 | 3.9 | 5 | 5 |
| P4KE75(c)A | 64.1 | 71.3 | 78.8 | 1 | 40 | 103.0 | 4.1 | 5 | 5 |
| P4KE82(c) | 66.4 | 73.8 | 90.2 | 1 | 40 | 118.0 | 3.6 | 5 | 5 |
| P4KE82(c)A | 70.1 | 77.9 | 86.1 | 1 | 40 | 113.0 | 3.7 | 5 | 5 |
| P4KE91(c) | 73.7 | 81.9 | 100.0 | 1 | 40 | 131.8 | 3.2 | 5 | 5 |
| P4KE91(c)A | 77.8 | 86.5 | 95.5 | 1 | 40 | 125.0 | 3.4 | 5 | 5 |
| P4KE100(c) | 81.0 | 90.0 | 110.0 | 1 | 40 | 144.0 | 2.9 | 5 | 5 |
| P4KE100(c)A | 85.5 | 95.0 | 105.0 | 1 | 40 | 137.0 | 3.1 | 5 | 5 |
| P4KE110(c) | 89.2 | 99.0 | 121.0 | 1 | 40 | 158.0 | 2.7 | 5 | 5 |
| P4KE110(c)A | 94.0 | 105.0 | 116.0 | 1 | 40 | 152.0 | 2.8 | 5 | 5 |
| P4KE120(c) | 97.2 | 108.0 | 132.0 | 1 | 40 | 173.0 | 2.4 | 5 | 5 |
| P4KE120(c)A | 102.0 | 114.0 | 126.0 | 1 | 40 | 165.0 | 2.5 | 5 | 5 |
| P4KE130(c) | 105.0 | 117.0 | 143.0 | 1 | 40 | 187.0 | 2.2 | 5 | 5 |
| P4KE130(c)A | 111.0 | 124.0 | 137.0 | 1 | 40 | 179.0 | 2.3 | 5 | 5 |
| P4KE150(c) | 121.0 | 135.0 | 165.0 | 1 | 40 | 215.0 | 2.0 | 5 | 5 |
| P4KE150(c)A | 128.0 | 143.0 | 158.0 | 1 | 40 | 207.0 | 2.0 | 5 | 5 |
| P4KE160(c) | 130.0 | 144.0 | 176.0 | 1 | 40 | 230.0 | 1.8 | 5 | 5 |
| P4KE160(c)A | 136.0 | 152.0 | 168.0 | 1 | 40 | 219.0 | 1.9 | 5 | 5 |
| P4KE170(c) | 138.0 | 153.0 | 187.0 | 1 | 40 | 244.0 | 1.7 | 5 | 5 |
| P4KE170(c)A | 145.0 | 162.0 | 179.0 | 1 | 40 | 234.0 | 1.8 | 5 | 5 |
| P4KE180(c) | 146.0 | 162.0 | 198.0 | 1 | 40 | 258.0 | 1.6 | 5 | 5 |
| P4KE180(c)A | 154.0 | 171.0 | 189.0 | 1 | 40 | 246.0 | 1.7 | 5 | 5 |
| P4KE200(c) | 162.0 | 180.0 | 220.0 | 1 | 40 | 287.0 | 1.50 | 5 | 5 |
| P4KE200(c)A | 171.0 | 190.0 | 210.0 | 1 | 40 | 274.0 | 1.53 | 5 | 5 |
| P4KE220(c) | 175.0 | 198.0 | 242.0 | 1 | 40 | 344.0 | 1.16 | 5 | 5 |
| P4KE220(c)A | 185.0 | 209.0 | 231.0 | 1 | 40 | 328.0 | 1.22 | 5 | 5 |
| P4KE250(c) | 202.0 | 225.0 | 275.0 | 1 | 40 | 360.0 | 1.11 | 5 | 5 |
| P4KE250(c)A | 214.0 | 237.0 | 263.0 | 1 | 40 | 344.0 | 1.16 | 5 | 5 |
| P4KE300(c) | 243.0 | 270.0 | 330.0 | 1 | 40 | 430.0 | 0.93 | 5 | 5 |
| P4KE300(c)A | 256.0 | 285.0 | 315.0 | 1 | 40 | 414.0 | 0.97 | 5 | 5 |
| P4KE350(c) | 284.0 | 315.0 | 385.0 | 1 | 40 | 504.0 | 0.79 | 5 | 5 |
| P4KE350(c)A | 300.0 | 332.0 | 368.0 | 1 | 40 | 482.0 | 0.83 | 5 | 5 |
| P4KE400(c) | 324.0 | 360.0 | 440.0 | 1 | 40 | 574.0 | 0.70 | 5 | 5 |
| P4KE400(c)A | 342.0 | 380.0 | 420.0 | 1 | 40 | 548.0 | 0.73 | 5 | 5 |
| P4KE440(c) | 356.0 | 396.0 | 484.0 | 1 | 40 | 630.0 | 0.64 | 5 | 5 |
| P4KE440(c)A | 378.0 | 418.0 | 462.0 | 1 | 40 | 600.0 | 0.67 | 5 | 5 |

1. VF<3.5V @ IF=25A for P4KE6.8 thru P4KE200A, VF<6.5V @IF=25A for P4KE220 thru P4KE440A

2. "C" Suffix for Bi-Directional Devices

3. For the bidirection typ having V_{rw} of 10 volts and less, the I_R limit is doubled.



RATINGS AND CHARACTERISTIC CURVES P4KE SERIES

FIG.1 - PULSE DERATING CURVE

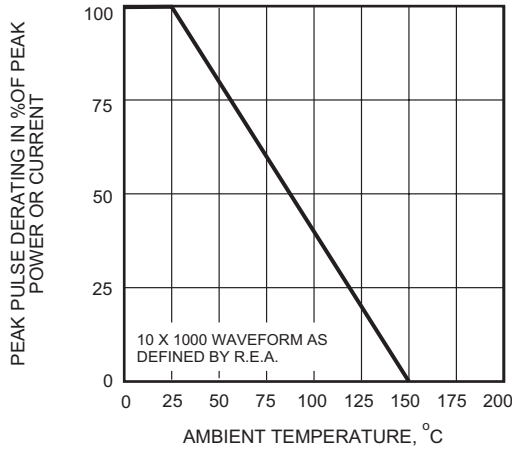


FIG.2 - TYPICAL REVERSE CHARACTERISTICS

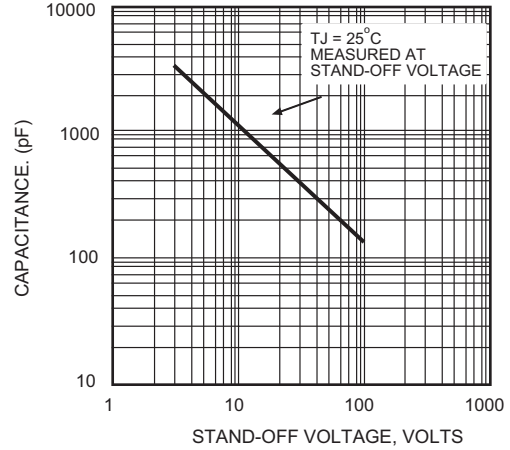


FIG.3 - PULSE RATING CURVE

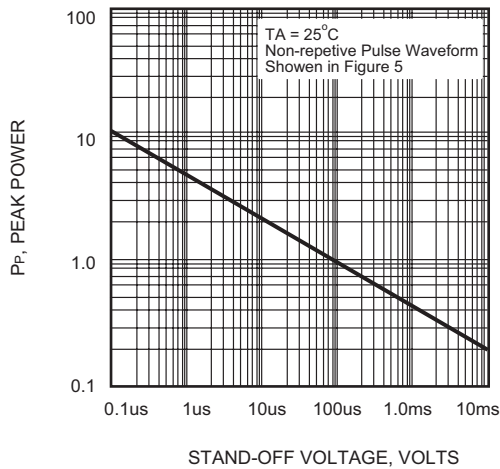


FIG.4 - STEADY STATE POWER DERATING CURVE

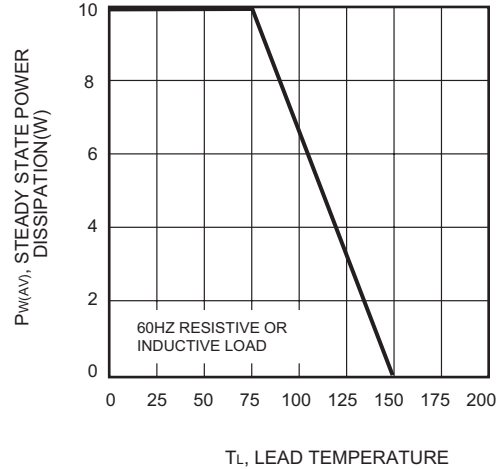
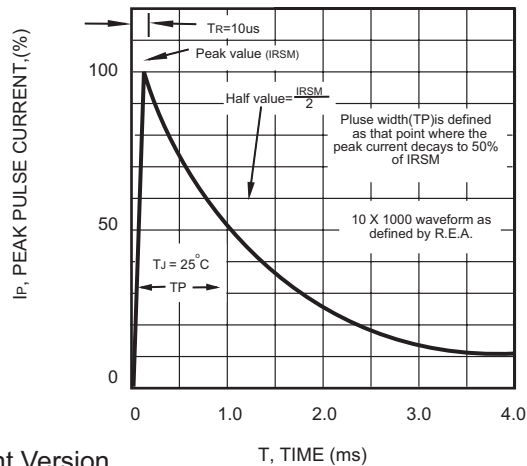


FIG.5 - PULSE WAVEFORM



"-G" suffix designates RoHS compliant Version